Appendix A-3
National Oceanic and Atmospheric Administration (NOAA)

NOAA-1	AIP	Aircraft Icing Product
NOAA-2	ASOS	Automated Surface Observing System
NOAA-3	LCP	Low Cloud Product
NOAA-4	NLDN	National Lightning Detection Network
NOAA-5	VAFTAD	Volcanic Ash Forecast Transport and Dispersion Model
NOAA-6	VAG	Volcanic Ash Graphic
NOAA-7	VAP	Volcanic Ash Product
NOAA-8	WGPP	Wind Gust Potential Product
NOAA-9	WRF	Weather and Research Forecast Model
NOAA-10	IRaDS	Integrated Radar Data Services
NOAA-11	MMCR	Millimeter Cloud Radar
NOAA-12	PACE	Prototype Aviation Collaborative Effort
NOAA-13	PTI	Pilot Training Initiative
NOAA-14	AOC	Aviation Operations Course
NOAA-15	HYSPLIT	Hybrid Single Particle Lagrangian Integrated Trajectory Model
NOAA-16	TAF	Terminal Area Forecast
NOAA-17	CCFP	Collaborative Convective Forecast Product
NOAA-18	GFA	Graphical Forecast for Aviation
NOAA-19	DLAC	Distance Learning Aviation Course

Aircraft Icing Product (AIP)

PROGRAM/PROJECT: Satellite Meteorology and Climatology Division, [http://www.orbit.nesdis.noaa.gov/smcd/opdb/aviation/icg.html]
LEAD AGENCY: National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS)
LEAD AGENCY POINT OF CONTACT: Mitch Goldberg, NESDIS, 301-763-8078, mitch.goldberg@noaa.gov
PROGRAM POINT OF CONTACT: Gary Ellrod, NESDIS, 301-763-8204 ext 140, gary.ellrod@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  5: 1

FUNDING

• ***Programmed/Planned ($'s/FY):***	/FY 05	/FY 06	/FY 07
	$20 K	NF	NF

TYPE OF PROGRAM/APPLICATION

- R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** Multi-spectral IR GOES product depicting areas of potential icing from Imager and approximate altitudes from Sounders (Icing Enhanced Cloud-top Altitude Product (ICECAP).
- ***How will operations be changed/improved:*** The new product will provide forecasters with additional guidance to help improve warnings and short range forecasts of in-flight icing.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Office of Research and Applications (ORA) Research Project Plan.
- ***Program/Project verification process:*** GOES Improved Measurement Product Assurance Plan reviews.
- ***Method used for end product validation:*** Comparison with aircraft pilot reports by means of NOAA/FSL's Real-Time Verification System (RTVS). Reports from individual forecast offices or other users.
- ***Operational training for the user:*** Periodic workshops sponsored by National Weather Service (NWS), Cooperative Program for Operational Meteorology, Education and Training (COMET), National Weather Association (NWA), and the American Meteorological Society (AMS). Distance learning modules.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Inclusion of merged icing/cloud top product (ICECAP) in RTVS (NESDIS funding requested)
- ***Program becomes operational:*** TBD. Product is experimental, but could become available for operational implementation after FY06 if funding is available and product is officially requested. Dependant on NWS requirements and AWIPS Build schedules.
- ***Plans for further improvements:*** None planned.

Automated Surface Observing System (ASOS)

{PRIVATE **}**

PROGRAM/PROJECT: ASOS product improvements. [http://www.nws.noaa.gov/asos]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA), Federal Aviation Administration (FAA), Department of Defense (DoD)
LEAD AGENCY POINT OF CONTACT: Lee Stang, NWS (Program Management Branch Chief), 301-713-9001 ext 101, lee.stang@noaa.gov
PROGRAM POINT OF CONTACT: Rick Ahlberg, NWS (ASOS PI Manager), 301-713-1975 ext 160, richard.ahlberg@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  1: 7 **2:** 5 **4:** 2 **6:** 6

FUNDING

- ***Programmed/Planned ($'s/FY):*** $12M /FY 05 $12M /FY 06 $16M /FY07 $16M /FY08

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** *upgrades to the ACU processor, all-weather precipitation accumulation gauge, ice-free wind sensor, dew point sensor, precipitation identifier, ceilometer, and improved freezing precipitation algorithm and ceiling/visibility reporting*
- ***How will operations be changed/improved:*** *increased reliability, reduced maintenance, and better observations to support aircraft operations*

{PRIVATE }PROGRAM/PROJECT MANAGEMENT {tc \l 1 "PROGRAM/PROJECT MANAGEMENT "}

- ***Basic guidance document for this program:*** ASOS specifications and requests for change.
- ***Program/Project verification process:*** Preliminary and Critical Design Reviews, Functional and Physical Configuration Audits. The ASOS Program Management Committee and the ASOS Configuration Control Board provide oversight.
- ***Method used for end product validation:*** Component, Integration, System and Acceptance Testing including Operational Acceptance Tests.
- ***Operational training for the user:*** Installation Instructions; Updates to Maintenance Manuals, Software Documentation, and Training Materials and Courses.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Complete ACU processor upgrade and dew point sensor deployment in June 2005. Complete all-weather precipitation accumulation gauge deployment in March 2005. Complete operational testing of new "ice free" wind sensor in October 2004. Full-scale deployment of new wind sensor will begin in December 2004 and extend through December 2005. Complete development of enhanced precipitation identifier in March 2005, complete operational testing in September 2005.
- ***Program becomes operational:*** ASOS is an operational system. Product improvements will continue through the FY 09 timeframe.
- ***Plans for further improvements:*** Additional capabilities for sunshine duration and snow depth.

Low Cloud Product (LCP)

PROGRAM/PROJECT: Satellite Meteorology and Climatology Division (SMCD), [http://www.orbit.nesdis.noaa.gov/smcd/opdb/aviation/fog.html]
LEAD AGENCY: National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS)
LEAD AGENCY POINT OF CONTACT: Mitch Goldberg, NESDIS, 301-763-8078, mitch.goldberg@noaa.gov
PROGRAM POINT OF CONTACT: Gary Ellrod, NESDIS, 301-763-8204 ext 140, gary.ellrod@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  1: 1, 5

FUNDING

• ***Programmed/Planned ($'s/FY):***	/FY 05	/FY 06	/FY 07
	$40 K	NF	NF

TYPE OF PROGRAM/APPLICATION

- Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** *an enhanced GOES fog and low cloud image product for nighttime use that will highlight areas of possible low ceilings using satellite infrared and surface temperature data.* Large scale composite images for eventual use in AWIPS.
- ***How will operations be changed/improved:*** Increase safety by providing forecasters and weather specialists with a briefing and "situational awareness" tool to help determine instrument flight rule (IFR) conditions near airports and along major flight routes.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Office of Research and Applications (ORA) Research Project Plan.
- ***Program/Project verification process:*** GIMPAP and NWS project reviews.
- ***Method used for end product validation:*** Pilot reports, METAR surface observations, NOAA-FSL Real-Time Verification System (proposed), and other satellite data.
- ***Operational training for the user:*** Periodic workshops sponsored by the National Weather Service, the Cooperative Program for Operational Meteorology Education and Training, the National Weather Association, and the American Meteorological Society. VISIT distance learning module (now available via the Web).

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Prototype products for NESDIS operations - Early FY05
- ***Program becomes operational:*** TBD. Product is experimental. Implementation dependant on official request from NWS via Satellite Products and Services Review Board and AWIPS Build schedules.
- ***Plans for further improvements:*** Reduce under-detection of IFR conditions at night. Further evaluation of Rapid Update Cycle-2 surface temperature data. Develop equivalent product for daytime use.

National Lightning Detection Network (NLDN)

PROGRAM/PROJECT: [http://www.lightningstorm.com/tux/jsp/discover/nldn/index.jsp]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS), Federal Aviation Administration (FAA), Department of Defense (DoD)
LEAD AGENCY POINT OF CONTACT: Joseph Facundo, NWS, 301-713-0341 ext 131, joseph.facundo@noaa.gov
PROGRAM POINT OF CONTACT: Michael Carelli, NWS, 301-713-1724 ext 184, michael.carelli@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  2: 5, 9

FUNDING

- ***Programmed/Planned ($'s/FY):*** NA

TYPE OF PROGRAM/APPLICATION

- Acquisition/Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** *a new contract for lightning data from the National Lightning Detection Network (NLDN). .*
- ***How operations will be changed/improved:*** *ensures lightning information in support of safe and efficient operations within the National Airspace System by alerting forecasters, pilots, controllers, and dispatchers to areas of lightning and convective activity.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** The Joint Action Group for Lightning Detection Systems is drafting the Statement of Work.
- ***Program/Project verification process:*** The NLDN contract is bound by normal contracting controls.
- ***Method used for end product validation:*** NA
- ***Operational training for the user:*** User publications, hands-on use, and Web-Based information.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Release the RFP in first quarter of CY 04.
- ***Program becomes operational:*** October 1, 2004
- ***Plans for further improvements:*** Include total lightning and long-range lightning.

Volcanic Ash Forecast Transport and Dispersion (VAFTAD) Model

PROGRAM/PROJECT: [http://www.arl.noaa.gov/ss/models/vaftad.html]
LEAD AGENCY: National Oceanic and Atmospheric Administration (NOAA), Air Resources Laboratory (ARL)
LEAD AGENCY POINT OF CONTACT:
PROGRAM POINT OF CONTACT: Barbara Stunder, ARL, 301-713-0295 ext 114, barbara.stunder@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  NA

FUNDING

- ***Programmed/Planned ($'s/FY):*** /FY 05 /FY 06 /FY07

TYPE OF PROGRAM/APPLICATION

- Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:***
- ***How will operations be changed/improved:***

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:***
- ***Program/Project verification process:***
- ***Method used for end product validation:***
- ***Operational training for the user:***

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** The NCEP VAFTAD Model replaced by the HYSPLIT Model in 2004.
- ***Program becomes operational:*** NA
- ***Plans for further improvements:*** NA

Volcanic Ash Graphic (VAG)

PROGRAM/PROJECT:
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS)
LEAD AGENCY POINT OF CONTACT: Grace Swanson, NESIDS/SAB, 301-763-8444, grace.swanson@noaa.gov, Chris Strager, Anchorage VAAC, 907-271-5132, chris.strager@noaa.gov
PROGRAM POINT OF CONTACT: Grace Swanson, NESIDS/SAB, 301-763-8444, grace.swanson@noaa.gov, Chris Strager, Anchorage VAAC, 907-271-5132, chris.strager@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  8: 1

FUNDING

- ***Programmed/Planned ($'s/FY):*** /FY 05 /FY 06 /FY07

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** *a man-machine product that will combine separate graphic and text products into one product depicting ash dispersion in accordance with ICAO required Volcanic Ash Advisory Center (VAAC) standards.*
- ***How will operations be changed/improved:*** *will provide the Washington and Anchorage Volcanic Ash Advisory Center with an improved graphical analysis and forecast of volcanic ash dispersion out to 18 hours.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** The ICAO Annex 3 and the Washington VAAC requirements document.
- ***Program/Project verification process:*** There are bi-monthly reviews within NCEP/NCO of all new products under development by the Computer Development Branch
- ***Method used for end product validation:*** Establish an objective verification process using imagery, surface observations, and PIREPS to verify ash forecast area coverage, direction and duration.
- ***Operational training for the user:*** User training is planned through outreach educational programs to Met Watch Offices within the Washington VAAC region.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Experimental VAG in the 4QFY05 timeframe.
- ***Program becomes operational:*** End of 2QFY06.
- ***Plans for further improvements:*** N/A

Volcanic Ash Product (VAP)

PROGRAM/PROJECT: Satellite Meteorology and Climatology Division (SMCD), [http://www.orbit.nesdis.noaa.gov/smcd/opdb/aviation/volc.html]
LEAD AGENCY: National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS)
LEAD AGENCY POINT OF CONTACT: Mitch Goldberg, NESDIS, 301-763-8078, mitch.goldberg@noaa.gov
PROGRAM POINT OF CONTACT: Gary Ellrod, NESDIS, 301-763-8204 ext 140, gary.ellrod@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  8: 7

FUNDING

• ***Programmed/Planned ($'s/FY):***	/FY 05	/FY 06	/FY07
	$40 K	NF	NF

TYPE OF PROGRAM/APPLICATION

- R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** A GOES image product depicting airborne volcanic ash using multi-band IR techniques. Two-satellite composite images for eventual use in AWIPS.
- ***How will operations be changed/improved:*** Optimal volcanic ash detection from GOES will provide satellite analysts with a better tool for tracking ash clouds than single band IR data, thus leading to better warnings and short range forecasts to en route aircraft.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Office of Research and Applications (ORA) Research Project Plan.
- ***Program/Project verification process:*** GIMPAP & NWS Aviation project reviews.
- ***Method used for end product validation:*** Comparison with reports from aircraft, volcanic observatories, or non-GOES satellite data (AVHRR, MODIS, TOMS, etc).
- ***Operational training for the user:*** Periodic workshops sponsored by NWS, Michigan Tech. University, Volcanic Ash Advisory Centers (VAAC), COMET, NWA, and AMS. Distance learning modules to be developed.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Prototype GOES multi-spectral product in AWIPS format for NESDIS operations (early FY05).
- ***Program becomes operational:*** TBD. Dependant on official request from NWS to NESDIS Satellite Products and Services Review Board and AWIPS Build schedules.
- ***Plans for further improvements:*** Refinement of new GOES-12+ technique using IR bands at 3.9, 11, and 13.3 micrometers. Minimize the diurnal effects due to solar reflectance at 3.9 micrometers.

Wind Gust Potential Product (WGPP)

PROGRAM/PROJECT: Satellite Meteorology and Climatology Division, [http://www.orbit.nesdis.noaa.gov/smcd/opdb/aviation/mb.html]
LEAD AGENCY: National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service (NESDIS)
LEAD AGENCY POINT OF CONTACT: Mitch Goldberg, NESDIS, 301-763-8078, mitch.goldberg@noaa.gov
PROGRAM POINT OF CONTACT: Kenneth Pryor, 301-763-8204, ken.pryor@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  6: 1

FUNDING

• ***Programmed/Planned ($'s/FY):***	/FY 05	/FY 06	/FY 07
	NF	***NF***	***NF***

TYPE OF PROGRAM/APPLICATION

- R&D/Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc.:*** Numerical indices that estimate the pre-storm potential for convective microbursts in both wet and dry environments using GOES sounder data.
- ***How will operations be changed/improved:*** Provide lead time (1-3 hours) for forecasters, flight controllers, and dispatchers for the potential for strong convective wind gusts in the airport environment.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Office of Research and Applications (ORA) Research Project Plan.
- ***Program/Project verification process:*** GOES Improved Measurement Product Assurance Plan (GIMPAP) reviews.
- ***Method used for end product validation:*** Comparison of wind gusts or other index values obtained from GOES Sounder data and numerical model "first guess" with Storm Prediction Center storm data and METAR reports. Comparisons with radiosonde profiles.
- ***Operational training for the user:*** Periodic workshops sponsored by National Weather Service (NWS), Cooperative Program for Operational Meteorology, Education and Training (COMET), National Weather Association (NWA), and the American Meteorological Society (AMS). NWA and AMS publications. Distance learning modules via VISIT program (completed FY04).

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Wet Microburst Severity Index (WMSI) to become available on Web (FY04).
- ***When program will become operational:*** Wind Index and Microburst Day Potential Index became available on AWIPS effective with OB-1 (completed May, 2003). Future improvements dependant on AWIPS Build schedules and NWS requirements.
- ***Plans for further improvements:*** Derived product image formats for AWIPS. Wet Microburst Severity Index (WMSI) upgrades.

Weather and Research Forecast (WRF) Model

PROGRAM/PROJECT: Model Development & Enhancement Product Development Team [http://www.wrf-model.org/]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA), Federal Aviation Administration (FAA), Air Force Weather Agency (AFWA), National Science Foundation (NSF), National Center for Atmospheric Research (NCAR), Oklahoma University Center for the Analysis and Prediction of Storms (CAPS), Forecast Systems Laboratory (FSL), National Center for Environmental Prediction (NCEP), Naval Research Laboratory (NRL), Fleet Numerical Meteorology and Oceanographic Center (FNMOC)
LEAD AGENCY POINTS OF CONTACT: Steve Koch, OAR/FSL, 303-497-5487, Steven.Koch@noaa.gov, Lynn Sherretz, OAR/FSL, 303-497-5580, lynn.sherretz@noaa.gov, Jim Sheets, 202-314-1121, james.sheets@auatac.com
PROGRAM POINT OF CONTACT: Stephen Lord, NCEP, 301-763-8005, ext 7202, stephen.lord@noaa.gov, Steve Koch, NOAA-FSL, 303-497-5487, steven.koch@noaa.gov, Nelson Seaman, NOAA/NWS/OS&T, 301-763-8000, ext. 7222, nelson.seaman@noaa.gov

SERVICE AREA (S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:*** **1:** 8,10,11,13 **2:** 7,10,11,12 **3:** 7 **5:** 8, 10 **6:** 9, 10, 11 **7:** 8, 10

FUNDING

Programmed/Planned ($'s/FY): /FY05 FY06 /FY07

TYPE OF PROGRAM/APPLICATION Product Development

- ***What's being developed, procured, etc:*** *a next-generation mesoscale forecast model and assimilation system that will advance both the understanding and prediction of mesoscale precipitation systems* and promote closer ties between the research and operational forecasting communities. The model is being developed as a collaborative effort among several government agencies together with the participation of a number of university scientists.
- ***How operations will be changed/improved:*** . *Common WRF modeling infrastructure shared by research and operations community will provide better forecasts of weather related aviation impact variables, will improve the safety and efficiency of aviation operations, and will sustain an accelerated flow of new science and technology into model forecasts well into the future.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** WRF Management Plan that defines the responsibilities of an Executive Oversight Board, a Research Applications Board, an Operations Requirements Board, a Development Testbed Center, Operational Testbed Centers, a WRF Program Coordinator and Program Office, Development Teams, and Working Groups.
- ***Program/Project verification process:*** Progress reports to the funding sponsors; periodic design review workshops; input from the Executive Oversight Board and supporting Boards; internal reviews within the participating organizations.
- ***Method used for end product validation:*** Idealized model testing against known solutions; extensive model evaluation using selected case studies; side-by-side comparison with other research and operations models; real-time experimental forecasting/verification.
- ***Operational training for the user:*** Annual user workshops; web-based tutorials; online user documentation.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Implement WRF model at NCEP in High-Resolution Window domains, October 2004.
- ***Program becomes operational:*** Operational use at NCEP, FSL, 2004, at AFWA in 2005.
- ***Plans for further improvements:*** Incorporate advanced model physics and advanced data assimilation schemes, extend to include capabilities from Navy's COAMPS model, extend to additional applications (aviation WRF, hurricane WRF, etc.).

Integrated Radar Data Services (IRaDS)

PROGRAM/PROJECT: [http://www.radarservices.org]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA), University of Oklahoma Center for Analysis and Prediction of Storms (CAPS), National Severe Storms Laboratory (NSSL), National Climatic Data Center (NCDC), and the University Corporation for Atmospheric Research (UCAR)
LEAD AGENCY POINT OF CONTACT: Tim Crum, NWS MASC W/OPS4, 405-573-8888 tim.d.crum@noaa.gov
PROGRAM POINT OF CONTACT: Joel D. Martin, Director, Integrated Radar Data Services, 405-325-0453, joel.martin@ou.edu

SERVICE AREA(S)/INITIATIVE(S)

- ***National Aviation Weather Initiatives:***
  None

FUNDING

Self-sustaining, cost-recovery operation with startup investments by the university.

TYPE OF PROGRAM/APPLICATION

Data service.

SCOPE OF PROGRAM/PROJECT

Integrated Radar Data Services (IRaDS) is a program of The University of Oklahoma developed as a top-tier provider of weather radar data transmission, at cost. IRaDS was formed in April 2004 as an outgrowth of a five-year award-winning Collaborative Radar Acquisition Field Test (CRAFT) under the Center for Analysis and Prediction of Storms at OU. CRAFT proved the concept that advanced university-only networking technologies could be harnessed to rapidly concentrate valuable weather data. Once concentrated, the data can then be shared (via standard Internet) for research, government, and private concerns. A memorandum of agreement, signed between OU and the National Oceanic and Atmospheric Administration (NOAA) in April 2004 codified creation of IRaDS as a top-tier provider and an essential mechanism for NOAA to share data via outsourced provisioning through the university environment.

PROGRAM/PROJECT MANAGEMENT

The mission of the University of Oklahoma is to provide the best possible educational experience for our students through excellence in teaching, research and creative activity, and service to the state and society. The IRaDS program model tracks closely with the OU mission by first creating concentrated high-resolution radar data that adds vitality to weather research. IRaDS serves the state by enabling weather commerce with data as a raw material to create a new generation of products and services. Such private growth also leverages legacy research and pushes future research. IRaDS serves society by helping weather experts generate improved weather awareness information for operations efficiency and resource protection.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Addition of more radars and alternative data sources (ongoing)
- ***Program becomes operational:*** Currently operational. Began operations August 2004.
- ***Plans for further improvements:*** Will evolve to a full weather data center concept for collocation of data and data provisioning cost-sharing by subscribers.

Millimeter Cloud Radar (MMCR)

PROGRAM/PROJECT: [http://www.etl.noaa.gov/technology/]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/Environmental Technology Laboratory (ETL)
LEAD AGENCY POINT OF CONTACT:
PROGRAM POINT OF CONTACT: Robert Kropfli, Environmental Technology Laboratory, 303-497-6235, rkropfli@etl.noaa.gov

SERVICE AREA (S):INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  N/A See FAA-programs

FUNDING

- ***Programmed/Planned ($'s/FY):*** /FY05 /FY06 /FY07

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** *MMCR technology is being integrated into a system for the ground-based detection of in-flight icing conditions. See FAA programs.*
- ***How operations will be changed/improved:*** *provide the ability to avoid areas of Super Large Droplets (SLD) that pose a serious icing threat to en-route aircraft.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Information not currently available.
- ***Program/Project verification process :*** Information not currently available.
- ***Method used for end product validation:***
- ***Operational training for the user:*** Information not currently available.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone***: NA
- ***Program becomes operational:*** MMCR is an operational system. Its capability is being incorporated into the FAA's GRIDS.
- ***Plans for further improvements:*** NA

Prototype Aviation Collaborative Effort (PACE)

PROGRAM/PROJECT: [http://www.srh.weather.gov/ftproot/sram/pace.htm]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)/Forecast Systems Laboratory (FSL), and the Federal Aviation Administration (FAA)
LEAD AGENCY POINT OF CONTACT: Paul Witsaman, Regional Aviation Meteorologist, Southern Region, 817-978-1100 ext. 116, paul.witsaman@noaa.gov
PROGRAM POINT OF CONTACT: Thomas Amis, CWSU Fort Worth, 817-858-7523, thomas.amis@noaa.gov; Dennis Rogers, NOAA FSL, 303-497-6933, dennis.m.rogers@noaa.gov.

SERVICE AREA (S)/INITIATIVE (S):

- ***National Aviation Weather Initiatives:***
  1: 1 **2:** 1 **5:** 1 **7:** 2

FUNDING

- ***Programmed/Planned ($'s/FY):*** /FY05 /FY06 /FY07
- ***Provided by AWRP and NWS SRH***

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** *a suite of aviation forecast products tailored to the Air Route Traffic Control Center (ARTCC) en-route environment as part of the Traffic Management Unit (TMU) weather requirement definition.* The products include convection, icing, turbulence, and ceiling and visibility. One such product is the Tactical Convective Hazard Product (TCHP) that will provide graphical thunderstorm information to decision-makers in an easily understood format. Cross wind Tactical Decision Aid used to provide operational managers with information needed to for flow management and runway capacity based on crosswinds.
- ***How operations will be changed/improved:*** *More consistent products will enable better decisions concerning the flow of traffic within the National Airspace System*.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** PACE Concept of Operations Plan.
- ***Program/Project verification process:*** The Aviation Weather Technology Transfer (AWTT) process will be used.
- ***Method used for end product validation:*** The Aviation Weather Technology Transfer (AWTT) process will be used.
- ***Operational training for the user:*** Web based power point presentations and one-on-one training from Forecast Systems Laboratory and CWSU Fort Worth, TX.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** Completed operational evaluation during the 2003 convective season at Dallas/Fort Worth. Additional evaluation will be conducted in the spring of 2005 for the convective product, crosswind, thunderstorm impacted sectors and NWCF2.
- ***Program becomes operational:*** TBD
- ***Plans for further improvements:*** 2005 addition of icing, turbulence decision aids and forecasts with new map overlays depicting current aircraft location. The PACE web site will also migrate from a web site to a Java application, allowing for greater user flexibility and customization.

Pilot Training Initiative (PTI)

PROGRAM/PROJECT: AOPA/ASF Pilot Weather Training Project

LEAD AGENCY/COLLABORATING AGENCIES: Aircraft Owners and Pilots Association (AOPA)/Air Safety Foundation (ASF), National Oceanic and Atmospheric Administration (NOAA), Meteorologix, Minneapolis, MN

LEAD AGENCY POINT OF CONTACT: Kevin L. Johnston, NWS/OS23, (301) 713-1726 ext 116, Kevin.L.Johnston@noaa.gov

PROGRAM POINT(S) OF CONTACT: Carl Weiss, NWS/OS23, (301) 713-1726 ext 149, carl.weiss@noaa.gov
Kevin Murphy, AOPA/ASF, (301) 695-2131, kevin.murphy@aopa.org

SERVICE AREA(S)/INITIATIVE(S):

- ***National Aviation Weather Initiatives*:** "*Pilot and Controllers Training* - Develop and implement new training products for pilots and controllers on the interpretation of weather products. (NWS/FAA/Aviation Associations)." This language is contained in the 2005 Aviation Initiative**.**

FUNDING

- ***Programmed/Planned ($'s/FY):*** $30K/FY05 $15K/FY06 $50K/FY07

TYPE OF PROGRAM/APPLICATION: Weather training for Certificated Flight Instructors and general aviation (GA) pilots

SCOPE OF PROGRAM/PROJECT:

- ***What's being developed, procured, etc:***
  New training materials (live seminar and DVDs followed by expanded online training) for GA pilots and Certificated Flight Instructors on the interpretation and practical application of aviation weather products.
- ***How will operations be changed/improved:***
  Improved interpretation, correlation and aeronautical decision-making skills will result in a reduction in GA accidents due to adverse weather.

PROGRAM/PROJECT MANAGEMENT:

- ***Basic guidance document for this program:*** AOPA/ASF 2005 Tactical Plan
- ***Program/Project verification process:*** Periodic progress reports
- ***Method used for product validation:*** Number of pilots trained (seminar attendance – live and DVD distribution count)
- ***Operational training for the user:*** Nationwide live seminars in most major U.S. cities during FY05; standalone program version on DVD for smaller venues; development and national distribution of interactive online training in subsequent years

SCHEDULE/IMPLEMENTATION:

- ***Next major program milestone:*** Seminar delivery to begin
- ***Program becomes operational*** October 2004
- ***Plans for further improvements*** Improvements made as needed

Aviation Operations Course (AOC)

PROGRAM/PROJECT: NWS Aviation Operations Course

LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)

LEAD AGENCY POINT OF CONTACT: Kevin L. Johnston, NWS/OS23, (301) 713-1726 ext 116, Kevin.L.Johnston@noaa.gov

PROGRAM POINT(S) OF CONTACT: Carl Weiss, NWS/OS23, (301) 713-1726 ext 149, carl.weiss@noaa.gov
Michael Dion, NWS/OS6, (301) 713-0280 ext 111, michael.dion@noaa.gov
Jerry Griffin, NWS/OS6, (816) 880-9368 ext 234, jerry.griffin@noaa.gov

SERVICE AREA(S)/INITIATIVE (S):

- ***National Aviation Weather Initiatives:*** AOC is contained in the 2005 NWS Aviation Weather Initiative

FUNDING

- ***Programmed/Planned ($'s/FY):*** $0/FY05 $0/FY06 $0/FY07

TYPE OF PROGRAM/APPLICATION: Training for NWS aviation forecasters

SCOPE OF PROGRAM/PROJECT:

- ***What's being developed, procured, etc:***
  Training is planned for NWS aviation forecasters to give them a better understanding of:
  a) where within NWS aviation products and services are generated
  b) what these products are
  c) who our aviation customers are
  d) what impacts NWS products and services have on our aviation customers
- ***How will operations be changed/improved:***Better understanding of who NWS aviation customers are and the important impacts aviation forecasts have on them, coupled with an understanding of where their forecasts fit into the entire suite of NWS aviation products will enable NWS aviation forecasters to produce forecasts of greater utility.

PROGRAM/PROJECT MANAGEMENT:

- ***Basic guidance document for this program:*** FY 2005 Implementation Plan for NWS Training and Education
- ***Program/Project verification process:*** Number of forecasters taking the course
- ***Method used for product validation:*** Course completion; final exam score of ≥70%
- ***Operational training for the user:*** The AOC will be online at the NWSTC web site and available to NWS forecasters. The AOC will be added as a requirement for the NWS Forecaster Development Program.

SCHEDULE/IMPLEMENTATION:

- ***Next major program milestone:*** Training becoming operational
- ***Program becomes operational:*** November 2004
- ***Plans for further improvements:*** Improvements will be made based on suggestions by forecasters who have completed the course and as the course content changes.

Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model

PROGRAM/PROJECT: [http://www.arl.noaa.gov/ready/hysplit4.html]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA), Air Resources Laboratory (ARL)
LEAD AGENCY POINT OF CONTACT:
PROGRAM POINT OF CONTACT: Barbara Stunder, NOAA/ARL, 301-713-0295 ext 114, Barbara.Stunder@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  8: 5, 6

FUNDING

- ***Programmed/Planned ($'s/FY):***

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** *HYSPLIT will be replacing VAFTAD as the NCEP dispersion model for volcanic ash. HYSPLIT can run on output from meteorological models of varying scales corresponding to the spatial/temporal scale of interest. HYSPLIT can also simulate dispersion of other airborne hazardous materials.*
- ***How will operations be changed/improved:*** *Improved dispersion forecasts of volcanic ash and other airborne hazardous materials will allow better strategic and tactical avoidance of hazardous materials with the potential of saving aircraft and lives.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** N/A
- ***Program/Project verification process:*** N/A
- ***Method used for product validation:*** The model output is evaluated using satellite imagery or other measurements or observations.
- ***Operational training for the user:*** Hands-on training and text materials.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** N/A
- ***Program becomes operational:*** HYSPLIT is currently the NCEP operational dispersion model for radiological applications. An upgraded HYSPLIT that will be used for all NCEP dispersion applications is expected to replace VAFTAD and the current HYSPLIT in 2005.
- ***Plans for further improvements:*** N/A

Terminal Area Forecast (TAF) Improvement

PROGRAM/PROJECT: NWS Aviation Initiative
LEAD AGENCY/COLLABORATING AGENCIES National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)
LEAD AGENCY POINT OF CONTACT: Kevin L. Johnston, NWS/OS23, 301-713-1726 ext 116, Kevin.L.Johnston@noaa.gov
PROGRAM POINT OF CONTACT: Michael Graf, NWS, 301-713-1726 ext 117, Michael.graf@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***

FUNDING

- ***Programmed/Planned ($'s/FY):*** $400K/FY05 $400K/FY06 $300K/FY07

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc*:** an upgrade to the Aviation Forecast Preparation System (AvnFPS) to improve Terminal Area Forecasts with the application of new forecasting tools and verification techniques.
- ***How will operations be changed/improved*:** improve short-term (1-4 hrs) accuracy by use of conditional climatology. Reduce the time required to develop TAFs and upgrade the monitoring function to aid in more timely amendments for changing weather conditions.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** AvnFPS 2.1 User's Guide, June 17, 2004.
- ***Program/Project verification process:*** Field testing.
- ***Method used for product validation:*** Field evaluation.
- ***Operational training for the user:*** On line.

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** AvnFPS 3.1.
- ***Program becomes operational:*** September 2005.
- ***Plans for further improvements:*** Continue to refine smart tools and introduce first-guess TAF.

Collaborative Convective Forecast Product (CCFP)

PROGRAM/PROJECT: [http://cdm.aviationweather.gov/ccfp/]
LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS), Federal Aviation Administration (FAA)
LEAD AGENCY POINT OF CONTACT: Mark Andrews, NWS, 301-713-1726 ext 109, mark.andrews@noaa.gov
PROGRAM POINT OF CONTACT: Fred Johnson, NWS/AWC, 816-584-7204, fred.johnson@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***
  2: 1

FUNDING

- ***Programmed/Planned ($'s/FY):*** NA

TYPE OF PROGRAM/APPLICATION

- Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** *2 to 6 hour collaborative convective forecasts, in 2-hour incremented forecast periods, issued every two hours 22 hours per day from March through October.*
- ***How will operations be changed/improved: :*** *improves timeliness, accuracy, and relevance of convective weather forecasts for pilots and air traffic management and enhances daily traffic management plans in response to predicted weather impacts to operations. Strategy for traffic flow within the National Airspace System is based on this single forecast.*

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** NWS Instruction 10-810.
- ***Program/Project verification process:*** Real-Time Verification System (RTVS).
- ***Method used for product validation:***
- ***Operational training for the user:*** On line at http://cdm.aviationweather.gov/ccfp/docs/ccfp_brief_files/frame.html

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone:*** N/A
- ***Program becomes operational:*** The CCFP became operational May 2000.
- ***Plans for further improvements:*** N/A

Graphical Forecast for Aviation (GFA)

PROGRAM/PROJECT: NWS Aviation Initiative

LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS)

LEAD AGENCY POINT OF CONTACT: Kevin L. Johnston, NWS/OS23, (301) 713-1726 ext 116, Kevin.L.Johnston@noaa.gov

PROGRAM POINT OF CONTACT: Michael Graf, NWS/OS23, 301-713-1726 ext 117 michael.graf@noaa.gov

SERVICE AREA(S)/INITIATIVE (S)

- ***National Aviation Weather Initiatives:***

FUNDING

- ***Programmed/Planned ($'s/FY):*** $300K/FY05 $300K/FY06 $300K/FY07

TYPE OF PROGRAM/APPLICATION

Product Development

SCOPE OF PROGRAM/PROJECT

- ***What's being developed, procured, etc:*** new aviation forecast products which are graphically based using geo-referenced digital objects. The new standard will require improvements to NWS production software and improvement to user software so that the new products can be visualized.
- ***How will operations be changed/improved:*** GFA will enhance the ability of users to understand and apply forecast information by allowing graphical forecast information to be displayed on many types of display units.

PROGRAM/PROJECT MANAGEMENT

- ***Basic guidance document for this program:*** Under development.
- ***Program/Project verification process:*** TBD
- ***Method used for product validation:*** TBD
- ***Operational training for the user:*** TBD

SCHEDULE/IMPLEMENTATION

- ***Next major program milestone*:** TBD
- ***Program becomes operational:*** Planned for January 2006.
- ***Plans for further improvements:*** TBD

Distance Learning Aviation Courses (DLAC)

PROGRAM/PROJECT: NWS/COMET Distance Learning Aviation Courses (DLAC)

LEAD AGENCY/COLLABORATING AGENCIES: National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS) in collaboration with the University Corporation for Atmospheric Research (UCAR)/Cooperative Program for Operational Meteorology, Education and Training (COMET)

LEAD AGENCY POINT(S) OF CONTACT: Kevin L. Johnston, NWS/OS23, (301) 713-1726 ext 116, Kevin.L.Johnston@noaa.gov Eli Jacks, NWS/OS6, (301) 713-0280 ext 124, elliott.jacks@noaa.gov

PROGRAM POINT(S) OF CONTACT: Carl Weiss, NWS/OS23, (301) 713-1726 ext 149, carl.weiss@noaa.gov
Mike Dion, NWS/OS6, (301) 713-0280 ext 111, michael.dion@noaa.gov
Dr. Joe Lamos, COMET, (303) 497-8465, lamos@comet.ucar.edu

SERVICE AREA(S)/INITIATIVE(S):

- ***National Aviation Weather Initiatives:*** DLAC is contained in the 2005 NWS Aviation Weather Initiative

FUNDING

- ***Programmed/Planned ($'s/FY):*** $250K/FY05 $250K/FY06 $250K/FY07

TYPE OF PROGRAM/APPLICATION: Training for NWS aviation forecasters

SCOPE OF PROGRAM/PROJECT:

- ***What's being developed, procured, etc:***
  Interactive training courses for forecasters on various aviation weather hazards are being and will be developed by COMET. The initial course on low-cloud and fog forecasting for aviation (DLAC1) is operational and online. The 2nd course on convective forecasting for aviation (DLAC2) is in its early stages of development
- ***How will operations be changed/improved:***
  As a result of this training, NWS forecasters will be better able to forecast weather phenomena influencing aviation and will have an deeper understanding of what impacts their forecasts have on aviation operations. Improved aviation weather forecasts will lead to safer, more efficient and more economical aircraft operations.

PROGRAM/PROJECT MANAGEMENT:

- ***Basic guidance document for this program:*** DLAC Project Plan FY 2005 Implementation Plan for NWS Training and Education FY 2005 COMET Program Plan
- ***Program/Project verification process:*** Monthly reports as part of the COMET update.
- ***Method used for product validation:*** Initially quiz scores; in time forecast verification scores.
- ***Operational training for the user:*** Since DLAC1 was first offered to NWS forecasters in June 2003, 611 have registered for the course and 366 have graduated.

SCHEDULE/IMPLEMENTATION:

- ***Next major program milestone:*** Beta testing of DLAC2, 1st quarter FY06
- ***Program becomes operational:*** Initial DLAC2 delivery, 2nd quarter FY06
- ***Plans for further improvements:*** DLAC1 is frequently improved based on student input. Improvements to subsequent DLACs will follow this rationale.